REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the following discussion and present amendment, is respectfully requested.

Claims 10-13 and 18-21 are pending in the present application, Claims 19-21 having been added. Support for new Claims 19-21 is believed to be self-evident from the originally filed specification.[1]

In the outstanding Office Action, Claims 10-12 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Goesele et al. (US 6,150,239, hereinafter "Goesele") in view of Sakaguchi et al. (US 2003/0170990, hereinafter "Sakaguchi"); and Claim 13 was rejected under 35 U.S.C. § 103(a) in view of Goesele and in view of Sakaguchi and further in view of Maleville et al. (US 6,403,450, hereinafter "Maleville").

Applicants respectfully submit that Claim 18 patentably distinguishes over Goesele and Sakaguchi, when taken in proper combination.

The outstanding Office Action acknowledges at page 3 that Goesele does not disclose the claimed:

> determining hydrogen ion implantation conditions including dose, energy and implantation current that create a buried, embrittled film at a depth, with respect to an implanted face of the initial SiC substrate, wherein an implantation defect concentration in a first 500 nm of implanted SiC is lower than 9.10^{20} atoms/cm^3, and a number of acceptor defects compatible with desired electrical properties of an active thin layer is obtained; [and]
>
> thinning a layer of the SiC remaining fastened to the target substrate to a thickness lower than 500 nm.

However, Goesele does not demonstrate that a person of ordinary skill in the art could "create a buried, embrittled film at a depth, with respect to an implanted face of the initial

[1] See, for example, page 9, line 28 to page 10, line 7 and page 7, line 28 to page 8, line 10.

SiC substrate, wherein an implantation defect concentration in a first 500 nm of implanted SiC is lower than 9.10^{20} atoms/cm^3."

In Goesele, to transfer a thin film layer of 580 nm, Goesele implants hydrogen at this depth (i.e., 580 nm). However, this will not result in "an implantation defect concentration in a first 500 nm of implanted SiC is lower than 9.10^{20} atoms/cm^3." As evidence of this position, the Office is referred to the present specification. As discussed for a non-limiting example in the specification, the proposed implantation depth is much greater than the depth desired for the SiC thin layer. For example, an implantation energy of 180 keV (see specification, page 12, liens 4-5) corresponds to an implantation depth in an initial SiC substrate of more than 1100nm (see specification, page 9, line 28 to page 10, line 7). In this non-limiting example, the transferred layer is thinned by about half to create a transferred layer with a residual concentration of defects spread out in a homogenous manner (see specification, page 8, lines 2-7).

While the Office Action takes the position that a person of ordinary skill in the art would have tried to optimize the implantation parameters to minimize implantation defects, the person of ordinary skill in the art would not have changed the implantation depth in Goesele. In the other words, a person of ordinary skill in the art would not have realized from Goesele that the implantation depth should be greatly increased beyond the 580 nm in order to "create a buried, embrittled film at a depth, with respect to an implanted face of the initial SiC substrate, wherein an implantation defect concentration in a first 500 nm of implanted SiC is lower than 9.10^{20} atoms/cm^3." Rather, based on the description of Goesele, the person of ordinary skill in the art, wanting to create a thin layer of 580 nm, would use an implantation depth of 580 nm, which would not result in the claimed "create a buried, embrittled film at a depth, with respect to an implanted face of the initial SiC substrate,

wherein an implantation defect concentration in a first 500 nm of implanted SiC is lower than 9.10^{20} atoms/cm^3."

Page 4 of the Office Action relies upon *In re Aller*. However, proceeding against the description of Goesele with respect to implantation depth (i.e., the 580 nm) to "create a buried, embrittled film at a depth, with respect to an implanted face of the initial SiC substrate, wherein an implantation defect concentration in a first 500 nm of implanted SiC is lower than 9.10^{20} atoms/cm^3" is not "routine experimentation" for a person of ordinary skill in the art. Proceeding contrary to accepted wisdom is evidence of non-obviousness.[2]

See also *In re Yates*, 663 F.2d 1054 (CCPA, 1981):

> The Solicitor, **relying upon *In re Aller*** argues that it is "not unobvious to discover optimum or workable ranges by routine experimentation." In many instances, this may be true. ***The problem, however, with such "rules of patentability"*** (and the ever-lengthening list of exceptions which they engender) is that they tend to becloud the ultimate legal issue--obviousness--and exalt the formal exercise of squeezing new factual situations into preestablished pigeonholes. Additionally, the emphasis upon routine experimentation is contrary to the last sentence of section 103.

Furthermore, Sakaguchi does not cure the deficiencies in Goesele. Sakaguchi describes that since defects such as micropores and dislocations are sometimes involved in the separation layer 24 remaining on the second substrate 26, the remaining separation layer 24 is selectively removed (see paragraph [0024] of Sakaguchi). Sakaguchi does not describe the concept of implanting very deep (well beyond the intended thickness of separation layer 24) and significantly thinning the transferred thin layer to obtain an SiC thin layer of good electrical quality.

[2] See MPEP §2145(X)(D)(3).

In view of the above-noted deficiencies, Applicants respectfully submit that a person of ordinary skill in the art could not properly combine Goesele and Sakaguchi to arrive at the claimed:

> determining hydrogen ion implantation conditions including dose, energy and implantation current that create a buried, embrittled film at a depth, with respect to an implanted face of the initial SiC substrate, wherein an implantation defect concentration in a first 500 nm of implanted SiC is lower than 9.10^{20} atoms/cm^3, and a number of acceptor defects compatible with desired electrical properties of an active thin layer is obtained... [and]
>
> thinning a layer of the SiC remaining fastened to the target substrate to a thickness lower than 500 nm.

Thus, Applicants respectfully submit that Claim 18 (and any claims dependent thereon) patentably distinguish over Goesele and Sakaguchi, taken alone or in proper combination.

Addressing each of the further rejections, each of the further rejections is also traversed by the present response as no teachings in any of the further cited references to Maleville can overcome the above-noted deficiencies of Goesele and Sakaguchi. Accordingly, it is respectfully requested that those rejections be withdrawn for similar reasons as discussed above.

Consequently, in light of the above discussion and present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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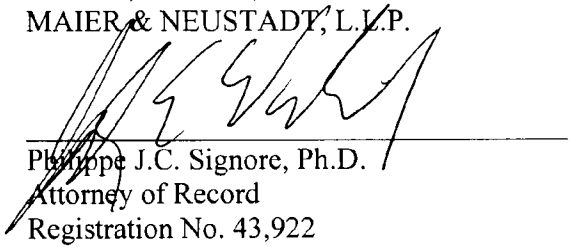

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